

Sustainability Reporting Systems in Context

Research-in-Progress

Introduction

This research investigates sustainability reporting software applications and the context of their demand, adoption, and implementation. Also called Corporate Social Responsibility (CSR) or Environmental, Social and Governance (ESG) reporting systems, these software applications are essential for large organizations that seek to report detailed sustainability data in the standardized templates the Socially Responsible Investing (SRI) industry demands. Part one of this paper describes these applications, first explaining the context that is necessary for understanding why there is market demand for these applications in the first place. Part two begins to investigate the adoption and implementation of these software applications in organizations. Such systems are being widely utilized in industry, and are data intensive. They play an important role in furthering organizational sustainability, and offer a new arena for information systems research.

The Context of Sustainability Reporting

Sustainability reporting is equally referred to as CSR reporting, because companies that practice it report on many factors in addition to those describing *environmental* sustainability, such as labor practices and supply chain issues involving human rights. For the purposes of this paper we will refer to the practice as sustainability reporting, with the understanding that sustainability in this context refers broadly to both environmental sustainability practices and other organizational practices aimed at societal good, as prescribed by the reporting templates used. We describe these templates and their associated reporting practices later in this section. But first, it is important to understand that the practice of sustainability reporting has quickly become mainstream; the following very large firms (and very many less well-known others) engage in annual sustainability reporting using the leading international standard for sustainability reporting— that of the Global Reporting Initiative, or the GRI¹:

Accenture, AMD, Audi, AT&T, Bank of America, Baxter, Bayer AG, British Petroleum, Campbell's Soup Co., Cisco, Citigroup, Coca Cola, Colgate Palmolive, CVS, Dell, Disney, Dow Chemical, Dow Corning, Dupont, Eli Lilly, EMC, Estee Lauder, ExxonMobil, FedEx, Ford, Fuji-Xerox, General Electric, General Motors, HP, Hyatt, IBM, Ikea, Intel, Jet Blue, Kellogg, Lockheed Martin, Marks and Spencer, McGraw-Hill, Merck, Microsoft, Morgan Stanley, Motorola, Nestle, Nokia, Phillips, Proctor & Gamble, Puma, Qualcomm, Samsung, SAP, Siemens, Sprint, Staples, State Street, Target, TD Bank, Texas Instruments, Timberland, UPS, Walmart, and Wells Fargo.

According to a 2011 KPMG study, 95 percent of the world's 250 biggest companies reported on their sustainability performance that year, up from 80 percent in 2008². Of the top 100 global disclosure scores featured in the 2011 Newsweek Green Rankings, Europe accounts for 65%, compared to 19% for North America and 10% for Asia-Pacific. These figures are consistent with those published by the Global Reporting Initiative (GRI): Europe accounts for 45% of the world's GRI certified sustainability reports, compared to 14% in North America and 24% in Asia-Pacific³. Such reports – when they meet the industry standard – contain detailed information about the reporting firm's performance in non-financial areas such as environmental impacts, human rights, labor practices, societal impacts, and product responsibility. It is standard practice for large companies engaging in periodic CSR reporting to put some version of their most recent report on their public website.

¹ These reports are listed in the searchable GRI database at <http://database.globalreporting.org/search>

² <http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/corporate-responsibility/Pages/de-facto-business-law.aspx>

³ <http://strategiccsr-sage.blogspot.com/2012/11/strategic-csr-europe-vs-us.html>

The production of a GRI-based sustainability report is a major undertaking for any company, and especially for large ones, because a GRI-based sustainability report is extremely detailed, complex and nuanced. The GRI organization certifies consultants and trainers in its methodology, and consulting companies also provide GRI training. A basic course in the GRI and its indicators takes about eight hours. Because of the complexity of the process, a number of software applications have been developed to support organizations in their sustainability reporting practices. For this reason, and because of the vast quantities of data produced collectively by the reporting process, the sustainability reporting phenomenon should be of interest to information systems researchers and practitioners.

The growing size and strength of the socially responsible investing (SRI) movement has created a market for sustainability analysis information, information derived from sustainability reports: According to a recent report by the Global Sustainable Investment Alliance (GSIA, 2012), there are \$13.6 trillion worth of sustainable investment assets worldwide, and in the U.S., 11.2% of all assets are under sustainable management. The SRI movement has an institutional structure designed to ensure that the intangible value of firms' environmental, social and governance (ESG) initiatives are accurately assessed, since these then become the basis for investment decisions. Note that the financial community uses the ESG terminology to refer CSR and/or sustainability initiatives.

The institutional structure supporting SRI relies on access to data about firms' sustainability initiatives. Such data is released into the public domain from various sources: from the firms themselves in the form of sustainability reports, by reports in the media about firm activities, by non-governmental organizations that work with firms to help them improve their ESG performance (e.g. Climate Counts), by employee transparency platforms (such as Glassdoor.com and LaborVoices.com), and by ethical consumption platforms (such as GoodGuide.com and CSRHub.com) increasingly embedded in mobile applications used at the point-of-purchase (Watts and Weiner, 2011). But the vast majority of the supply of sustainability data comes from firms' own sustainability reports.

Various categories of players comprise the institutional structure of SRI. These companies work to provide the SRI industry with detailed assessments of the potential long-term value of firms, on the basis how they are strategically positioned to address ESG/sustainability issues likely to arise in the medium to long-range future. First, the veracity of the information in corporate sustainability reports can be assured by third party auditors and accounting firms, although this is at the discretion of the reporting company and an additional expense. These auditors and assurers have their own assessment standards, put forth by the IAASB. Second, the industry supports researchers and raters, each with their own standards organizations. Sustainability analysts are employed by research companies to utilize every available data source to produce various company reports, much like an investment analyst does, except that their reports describe companies' intangible value rather than market value. The quality of these reports is maintained by adherence to the Accountable Responsible Investment Research Standards (ARISTA). These reports are expensive to compile, involving labor intensive analysis by trained experts, so the firms that do this (e.g. EIRIS, Vigeo, MSCI, RobecoSam, GMI) sell them at a high price to institutional investors, exchange traded social funds such as Calvert and Domini, and to raters and indices companies. Because these reports are expensive to create and hence to purchase, they are not in the public domain, and are little used outside of the investment community and capital markets. Raters and indices companies have a created value-adding niche for themselves by synthesizing these expansive reports down into simplified rating schemes, using various algorithms and formulas. Examples of companies that do this are Sustainalytics, MSCI and GMI. These raters simplify detailed research reports into easily comparable grading schemes, selling them to aggregators such as Bloomberg and Thompson Reuters, to stock exchanges and indices (which often do their own rating), to University libraries, and to organizations who are following and advocating particular metrics, such as climate, human rights, or toxins. The Global Initiative for Sustainability Ratings (GISR) has recently been formed to certify that rater companies comply with agreed-upon rating standards.

This SRI industry, and the massive quantities of data and information that fuel it in the form of sustainability reports, has emerged so quickly that many people are not even aware of it, but it clearly has implications for information systems and researchers. It is a very important phenomenon for sustainability, because it enables the financial world to hold firms accountable for their short-term externalities and to reward longer-term initiatives aimed at reducing these externalities.

The GRI-based Sustainability Reporting Process

Sustainability reporting is the organizational practice of voluntarily (except in those few countries such as Brazil where it is mandated) disclosing environmental, social and governance (ESG) performance information to stakeholders. Doing so enables organizational transparency and accountability about ESG performance, which in turn builds stakeholders' trust in the reporting organization and can lead to many other benefits. Many practitioners cite the competitive advantages they believe they reap from these initiatives, but the complexity of the multidimensional CSR construct has stymied attempts by scholars to irrefutably substantiate the claim of improved financial performance (Margolis and Walsh, 2003; Orlitzky et al., 2003). Some of the many drivers of the phenomenon are the potential for enhanced value of firm reputation; brand differentiation; consumer demand and customer engagement; cost savings from reduced resource use and energy consumption; the market for CSR information created by the socially responsible investing (SRI) movement; and the acknowledgement by risk managers of the need to plan for the impact global warming. Documented benefits of CSR include fostering consumer and employee engagement (Hoeffler *et al.*, 2010), enhancing corporate reputation (Liu *et al.*, 2010), lowering firm-idiosyncratic risk (Luo and Bhattacharya, 2009), and increasing profits (Husted and Salazar, 2006; Siegel and Vitaliano, 2007). CSR is also a means for attracting and retaining talent (Greening and Turban, 2000). According to a recent Deloitte survey, over 70% of 18 to 26 year-olds say a company's commitment to the community has an influence on their decision to work there (Deloitte, 2011).

Most companies that choose in good faith to provide their stakeholders with a sustainability report do so by using a standard reporting format. This allows for comparability between companies and is viewed favorably by the other players in the industry. The oldest and most widely recognized of these is the Global Reporting Initiative (GRI) standard. The GRI is a multi-stakeholder, network-based organization headquartered in Amsterdam. It was founded in Boston in 1997 by the US non-profit organizations the Coalition for Environmentally Responsible Economies ([CERES](#)) and the Tellus Institute. The [United Nations Environment Programme](#), the [UN Global Compact \(UNGC\)](#), the [Organisation for Economic Co-operation and Development](#), and the [International Organization for Standardization](#) are GRI partners, among others. Thousands of organizations, of all sizes and sectors, use GRI's Framework in order to understand and communicate their sustainability performance. As of August 2013, the GRI database contained 14,733 CSR reports, growing daily⁴.

Other important reporting standards exist in addition to the GRI. For example, the Dow Jones Sustainability Index (DJSI) standard is a relative newcomer that is quite similar to the GRI, and is increasingly being used in the U.S.. Other well-known standards include those of the UNGC, the Carbon Disclosure Project, OECD, and the ISO2600. Currently, 80% of companies that do CSR reporting use the GRI, and it has become the gold standard for doing so. For this reason, this paper focuses on the GRI.

The GRI consists of the following six categories: Economic, Environmental, Human Rights, Labor Practices and Decent Work, Society, and Product Responsibility. Each of these six categories is further broken down into sub-categories (called *aspects* in GRI terminology). Each of these *aspects* has one or more *indicators*, which are specific, mostly quantitative metrics for providing empirical support for each of the indicators. And for each of the indicators, GRI provides *protocols*, which give specific details regarding how to report these numbers. Table 1 below lists some example GRI indicators in order to make clear just how specific, detailed and quantitative most of the reporting requirements of the GRI are. It is clear that for large multinational corporations such as those listed above, collecting the necessary data to produce GRI compliant reports is a highly resource-intensive process.

⁴ <http://database.globalreporting.org/search>

	Indicator	How Reported	Examples/clarifications
EN1	Quantity of non-renewable input materials used	Weight & volume	Paper, wood, lubricants
EN3	Quantity of direct energy used	Joules	Coal, natural gas, gasoline, biofuels
EN4	Quantity of indirect energy used	" "	Electricity, heating, cooling, steam
EN8	Water withdrawal by source	Cubic meters	Municipal, rivers, oceans, ground water
EN15	Impact on endangered species (based on IUCN Red and National Conservation lists) by number of.	Quantity	Species & habitats affected, by operations & level of risk
EN19	Ozone-depleting emissions & substances emitted, by weight. Specify any increases and significant decreases.	CFC-11 equivalents	(produced+imported) minus (exported+used as feedstock+ destroyed w tech)
EN24	Amount of hazardous waste that you transport, import, export, or treat.	Weight by type	Per Basel convention
EN30	How much do you spend on environmental protection? Include environmental impacts only.	monetary value	Spending on waste disposal, cleanup, emissions, trtmnt
HR1	Total # and % of significant investment agreements and contracts that include human rights clauses or have undergone human rights screening.		
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association or collective bargaining may be violated or at significant risk, and actions taken to support rights.		
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.		
SO2	Percentage and total number of business units analyzed for risks related to corruption.		
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.		
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.		
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.		
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of signif products and services categories subject to such procedures.		
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.		
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.		

Table 1. Sample GRI Indicators

The environmental category consists of 30 indicators, with another 50 indicators distributed among the other five categories. Interested readers are referred to the GRI website (GlobalReporting.org) for descriptions of the indicators and protocols for all six categories of sustainability performance, along with their mission, history and methodology. Note that not all indicators are required for all companies. Some of them are required only if their impact has been *significant*. For example, EN20 and EN23 ask for quantities of toxic leaks and spills, but are only required to be reported in the case of significant emissions or spills. The GRI released version G4 of their standard in May 2013, but most organizations are reporting using one of the prior versions of the standard (3.0 and 3.1).

Several other issues are important for understanding the design of the GRI. First, the GRI has three *application levels*: A, B, and C. The lowest level, C, is designed for new reporters, and requires only that ten indicators are reported on, but there must be at least one each from the economic, environmental and

social categories. GRI-reporting companies cannot focus all their energies on one category to the exclusion of the others. The more indicators that are reported on, the higher the application level achieved. To attain application level B, 20 indicators must be reported fully, at least one from each of the six categories. And to attain level A, 55 or more fully-reported indicators, from across the six categories, must be disclosed. If requested to by the reporting company, the GRI will certify that the company has attained a certain application level using GRI protocols, by making a determination as to whether each indicator was reported on fully or partially. For example, if the protocol specifies the need to provide a quantitative number, and a description is entered instead, then the GRI considers this a partial disclosure and takes this into account as it is certifying the application level attained. In general, quantitative disclosures are favored. Another issue that will result in a partial disclosure determination is when reporting companies include only some but not all of their corporate assets' (e.g. plants, vehicles) externalities in a numeric quantity reported. In general, GRI looks for thorough explanations – if an indicator is not disclosed or only partially disclosed, the GRI looks more favorably on this when there is an associated explanation as to the reason for the partial or lack of disclosure. It calls this principle “Report or Explain”. Also, if a sustainability initiative was undertaken in order to comply with a *regulatory* requirement, this needs to be disclosed as well. GRI Analysts are trained to identify best and worst practices, and are adept at spotting attempts to game the system.

Importantly, when the GRI certifies that a company has attained a certain application level, they are certifying only that the information required to attain that level has been disclosed, *not that the information itself is accurate*. In this way, even reporting at the C application level works to create a culture of transparency. The stakes rise when companies strive to attain an A or B application level, since these required disclosures are extensive and are in addition to the requirement to increase the number of indicators disclosed on. The GRI reporting process is designed to move companies toward an annual reporting process, in order to hold them accountable for the long-term plans and strategies they were asked to disclose in prior reports. By making the entry bar high, the GRI reporting process becomes a sunk cost which is easier to continue regularly than to stop and restart periodically.

Sustainability Reporting within Organizations

The process of creating a GRI-quality sustainability report at higher application levels is a massive data gathering and aggregation effort that requires input from (and associated process changes) throughout the enterprise. It should be clear from the depth of reporting required that a software application is practically (although not actually) required for GRI reporting. All large GRI-reporting companies use a software application to do so. The GRI Website lists 18 sustainability reporting software applications that are formally sanctioned by the GRI organization. Others are being developed, or in the process of gaining GRI sanction. The dominant products in use in the U.S appear to be Enablon's Sustainability Management Platform, and CA's ecoSoftware. This paper focuses on the GRI Standard, but most sustainability reporting applications also produce reports that conform to other major standards such as those of the Global Compact, DJSI, etc. This enables companies that use such applications to easily produce multiple reports in different reporting standards, since doing so is mostly automated once the onerous task of data collection has been completed. These sustainability reporting software applications serve as a repository for collecting data and information over time, such that a particular report can be generated on a regular schedule. The sources of data for these applications are generally spread throughout the enterprise. For example, the firms' Human Resource systems typically have the information required for the labor category. Accounting and other operations-level systems provide data for the Economic value category. Existing systems established for the purpose of regulatory compliance – employee health and safety, product safety, environmental standards, etc., serve as sources of data for other indicators.

In addition to utilizing ongoing operations data, companies that have implemented other sustainability software applications use them as sources of sustainability reporting data. For example, Enterprise Carbon and Energy Management (ECEM) can provide much of the source CSR data for the environmental category. Software solutions for sustainability performance and project management (SPPM) can provide information on particular initiatives. Risk management software is a good source of information on the many indicators that become more material the greater they reflect an ESG risk. Firms that use product

life-cycle analysis software to assess cradle-to-grave externalities are able to use the data in these systems to populate indicators in the Product category.

Clearly a major part of the work of sustainability reporting is the gathering and entering of all this disparate data, both initially, and then on an ongoing basis. Once the data has been gathered, the software application does the work of formatting it on the basis of whichever standard templates the organization chooses to report their sustainability performance in.

In the process of our research-in-progress, at this point we had gained an understanding of what sustainability reporting applications are and roughly how they work. The next phase of this research was to investigate how organizations were adopting and implementing them.

Organizational Adoption and Implementation of Sustainability Reporting Software Applications

The above discussion presents information regarding the context of the sustainability reporting phenomenon. Our research-in-progress then proceeded in two phases. In phase one, we sought to understand organizational purchasing decisions regarding these applications. Phase two is still in progress, and entails interviewing organizational members who are involved in implementing these applications in order to understand how these systems are being used *in situ*.

Phase one – Adoption Factors

Adoption factors are not the focus of this research, but, since this is a new phenomenon, we thought it important to gain at least a rudimentary overview of adoption factors. We began by reading about sustainability software applications in industry publications. Many articles were written by Chris Mines, a vice president and research director at Forrester Research, who was then specializing in the sustainability software industry and had deep expertise in vendor practices. We contacted Chris and he granted us a face-to-face interview which lasted about an hour. His views are summarized as follows, referring to the industry as “susty”:

Despite very large inputs of venture capital, susty software vendors are struggling, with their CEOs working to reposition their products and not yet succeeding. Why? Because there is no buyer department for them. For regulatory compliance, the heavy emitter industries put systems in place years ago, so they are not purchasing. For financial compliance, CFOs also purchased systems years ago. The sustainability office doesn't have the budget. Marketing is somewhat interested, as is HR. If it is a SAP shop and SAP is selling, then that is a special case. But in general, when he's asked the IT folks why they purchased a system, it is because “the CEO told us to, or promised the Board they would, or promised the public they would”. So it all comes down to whether the CEO sees it as important or not. An important factor that seems to come into play are how different the susty views are across the multiple stakeholders involved, particularly with regard to the transparency that CSR reporting systems produce. For some, CEOs see opaqueness as being in their best interest as an obligation, with others seeing transparency as being in their best interest (Mines, personal communication, 7/2/13).

This interview raises more research questions than it resolves. In general, it seems that companies whose CEO's appreciated the need to engage in sustainability initiatives (whether on the basis of their personal values or due to pressure from their Boards and/or Public Relations departments), had resourced their sustainability departments a number of years previously, and these departments had already purchased the sustainability reporting software they were now using to create their reports. Investigation of vendors' websites revealed the users of two of the dominant reporting applications as follows: Enablon's users include UPS, Volkswagen, Puma, Accenture, UBS, Office Depot, and Timberland. Some of CS's ecoSoftware users are Siemens, Capgemini, Columbia Sportswear, BASF, Tesco, Fujitsu.

Phase two –Implementation Factors

In order to understand how companies were implementing their CSR reporting systems and processes, we are in the process of contacting the sustainability departments of those large companies listed above as GRI reporting companies, after first reading their sustainability reports on their websites. Due to length constraints, will report on our discussions with a single case company – UPS.

UPS' 2012 Sustainability Report was assured by Deloitte & Touche LLP and has been "checked" by the Global Reporting Initiative (GRI) at the A+ Application Level⁵. UPS is considered to be an exemplar of sustainability practices and reporting. We conducted a phone interview with their Corporate Sustainability Program Manager Patrick Browne on 8/14/2013. He is 48 years old and been with UPS for 25 years. Trained as mechanical engineer, he started out in plant engineering. In early 90s, he got into compliance and sustainability and has been full-time dedicated to sustainability for the past six years. He spends six months of the year on sustainability reporting: From January to March he collects the data, and then another few months working with the Director of PR to put the report together.

The Sustainability department at UPS currently consists of a core of six dedicated employees, of which Patrick is the manager, under Engineering. Another four dedicated sustainability employees are within the PR department. They also have *full-time* liaisons called Directors of Sustainability in the following functions: HR, Automotive/fleet, PR, Airline, Customer sales, Marketing, Finance/Accounting, and Procurement, but not IT. Patrick is trying to get the company to create a position for an IT liaison but has not been successful. He has an IT staff person assigned to supporting the Enablon software application, but this is at a relatively low level, for server support etc. The IT department has their own Green initiatives, but according to Patrick there is little communication at the managerial level between IT and the Sustainability department.

UPS released its first sustainability report in 2003. They followed GRI standards then and have ever since. Their report was very U.S.-centric initially, since they had already had the necessary data about U.S. operations in existing legacy systems. In 2007, they aligned their CSR reporting with their 10K, which drove them to start collecting International data. This was a challenge since didn't have legacy systems to draw data from. It wasn't until 2010 that they started to feel confident about the data quality of their international reporting. In 2009 they purchased Enablon, cost justifying it on the basis of enabling them to collect and report their GHG emissions. It was never intended to replace existing systems. They used it initially for reporting on emissions only; now they use it to store the data they pull in for reporting on all the GRI indicators.

They use the Enablon system as follows: They download indicator data from various existing legacy systems – General Ledger, HR (employee census, accidents, etc.), CAS (a 3rd party company that pays all their utility bills), their proprietary automotive IS that collects miles and fuel usage, and from other functions that have their own legacy systems. Using macros, they reformat this data into .csv files to be compatible with Enablon and then upload them into it. In this way Enablon is dedicated to CSR reporting, and serves no *primary* data collection function. Currently Enablon has 0% interoperability with existing legacy systems. Their wish list is to have the systems talk to each other directly so they don't have to do this cumbersome process, but at least there is no manual data entry. Patrick has talked to other Enablon users that key their data directly into Enablon. This works better for small companies, especially if they don't have pre-existing legacy systems. For these companies, Enablon serves as the repository for primary data collection. In the future, Patrick would like to have better systems interoperability and so avoid the risk of data entry errors, with an IT liaison make this happen to support better communications with IT.

UPS, a sustainability exemplar, has led us to a surprising finding which may or may not be generalizable to other organizations: that organizational IS/IT departments may be excluded from the purchase

⁵ <http://www.responsibility.ups.com/Sustainability>

decision and process of implementing sustainability reporting systems. We suggest that this practice may be detrimental to the organization, since there are considerations – such as error reduction through interoperability, and efficiencies attributable real-time platform integration – that expertise in IS/IT can increase the chances of optimizing. Note that this is research-in-progress and we are in the process of collecting additional data to determine how widespread this phenomenon is.

Conclusion

This research-in-progress contributes to information systems research by explaining and exploring a new category of information systems application that supports the extremely data-intensive and relatively new phenomenon of corporate sustainability reporting. Such reporting supports the rapidly growing socially responsible investment movement, an extremely important crusade that utilizes market mechanisms to reward good corporate sustainability behavior. Sustainability reporting also supports the cause of corporate transparency in general, supporting other civil society efforts such as the direct exposure of supply chain abuses, and ethical consumption. Information technology has a long history of enabling transparency, of which this phenomenon is a logical extension. We hope this work engages other IS researchers in efforts to understand the current impact and future potential of ICT transparency enablement for the greater good.

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